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UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science
DOCTOR OF NURSING PRACTICE

Screening for Iron-Deficiency Anemia in the
Pediatric Population (Ages 1-17) in Gonaïves, Haiti

by

Cara Fratianni MSN, RN, PHN, CNL

A Doctor of Nursing Practice Portfolio presented to the
FACULTY OF THE HAHN SCHOOL OF NURSING AND HEALTH SCIENCE
UNIVERSITY OF SAN DIEGO

In partial fulfillment of the
requirements for the degree
DOCTOR OF NURSING PRACTICE

May 2020

Faculty Advisor: Sharon Boothe-Kepple PhD, MSN, FNP-C, PHN

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I would like to thank my faculty advisor, Sharon Boothe-Kepple PhD, MSN, FNP-C, PHN for facilitating me through the process of creating a Doctor of Nursing Practice (DNP) evidence-based practice (EBP) project. I would also like to thank Pastor Maula Jean-Marie, the team of The Rosemila Project feeding program on the ground in Gonaïves, Haiti, as well as their board of directors. I would like to thank the team members and faculty who traveled to Haiti for the University of San Diego (USD) medical mission trip in December and January 2014 and 2015. I would like to thank all past and current donors of The Rosemila Project, especially the donors who donated the supplies for this trip including the Hahn School of Nursing and Health Science. Finally, I would like to thank our former Dean Sally Brosz-Hardin for approving and supporting this medical mission.

Opening Statement and Reflections on Growth in Nurse Practitioner Role

I decided to attend graduate school to obtain my Doctor of Nursing Practice to acquire more autonomy in my practice. I wanted to gain the ability to prescribe, treat, and diagnose patients in an outpatient care setting. It is challenging to see patients frequently readmitted to the hospital, my advanced degree will help me work on the front lines as a part of their preventative healthcare team. My Bachelor's of Science in Kinesiology and Health with an emphasis in nutrition will provide the acumen needed to help provide preventative healthcare for my patients. I have always wanted to achieve a terminal degree. I returned to University of San Diego for the Doctor of Nursing Practice Program (specializing in family nurse practitioner and emergency nurse practitioner) because I had such a great experience at this institution for my Master's of Science in Nursing Degree

I am an enthusiastic leader with a commitment to lifelong learning and a passion for patient care. I enjoy working in an acute care setting with diverse patient populations. I currently work as a Registered Nurse at Scripps Memorial Hospital, a large urban hospital in the Neurological/Orthopedic/Surgical/Trauma Progressive Care Unit where we also take care of medical and cardiac overflow patients. I achieved excellent grades while both engaging and leading in many extracurricular activities. I served as a member of the Graduate Nursing Student Association and was elected as a Graduate Student Counsel Representative. I also served on the philanthropic committee and was part of the diversity club. In January 2020, I was one of three University of San Diego Nursing Students selected to go to Uganda and provide medical care to pediatric patients. We held two free clinics for over 600 patients. I worked in Mbarara, Uganda at Holy Innocent's Hospital in the Emergency Department and helped to expand their triage

services. I also taught two BLS courses including AED training for firefighters, paramedics, RNs, and MDs.

With over 10 years of both local and international community service experience, I am extremely passionate about advocating for social change, improving education, and increasing access to care and providing resources to underserved populations. I co-founded a feeding program called The Rosemila Project in Gonaives, Haiti for over 200 children and am currently serving as the President of the Organization and the Health and Educational Development Director. We have served over 50,000 meals since the program started in 2012. I was the first USD nursing student to lead and organize a medical mission in collaboration with faculty and students December of 2014. The Rosemila Project started a farming program and sewing workshop to increase sustainability and help empower Haitians to learn a trade so that families can keep their children in school. I have spent time volunteering in emergency departments in Haiti. My article, *Atypical Variant of Cutaneous Tuberculosis Presentation in an Adult HIV-Infected Patient in an Emergency Department in Haiti* was recently published in Advanced Emergency Nursing Journal, March of 2020.

After graduation, my goal is to work in an emergency department in an underserved community. My lifelong goal is to make an impact in this small ecosystem where I will be working. I also aspire to volunteer and help train Haitian nurses to improve the conditions of their hospitals in Haiti.

Documentation of Mastery of DNP Outcomes

Abstract

Purpose: The purpose of this pilot project is to screen for iron-deficiency anemia in pediatric patients (ages 1-17) in a primary school in Gonaïves, Haiti. Patients with anemia will be treated with oral supplemental iron for a period of four weeks according to WHO guidelines (WHO, 2011). All students will be treated empirically for helminths per WHO guidelines, unless treated elsewhere in the last six months (WHO, 2017). Nutritional status will also be assessed using MUAC according to WHO guidelines (2017).

Background Summary: Malnutrition contributes significantly to the problem of iron-deficiency anemia, with one in four children exhibiting stunting of growth due to moderate or severe malnutrition (USAID, 2018). Iron-deficiency anemia is a huge problem in Haiti, with a reported prevalence of 65% of children between the ages of six months- five years of age having the disease (EMMUS-V, 2012). Over the past 10 years in Haiti, the prevalence of iron-deficiency anemia in the pediatric population has increased from 61% to 66% (USAID, 2018).

Some of the causes of iron-deficiency anemia can include malnutrition, chronic bleeding, helicobacter pylori or an absorption problem in the gastrointestinal tract (NIH, 2016). Iron-deficiency anemia is a disease that occurs when the body has a lower than normal number of red blood cells in the body. There is a reduction in both red blood cell mass and a drop in hemoglobin (Hgb) level (NIH, 2016). The World Health Organization defines anemia as a Hgb level of less than 11 for children 6-59 months of age, Hgb less than 11.5 for children 5-11, Hgb less than 12 for children 12-14 and non-pregnant women, and Hgb less than 13 for men ages 15 and older (WHO, 2011). Severe anemia includes Hgb level of less than 7 for children 6-59 months of age and Hgb level of less than 8 for children 5-14, non-pregnant women, and men ages 15 and older (WHO, 2011). It generally takes an extended period of time for iron-deficiency

anemia to occur. The body needs iron to build healthy red blood cells. When the body is lacking in iron, it begins using up the iron stores and less red blood cells are produced (NIH, 2016).

Infants, young children, and women of childbearing age are at highest risk for iron-deficiency anemia (NIH, 2016). Signs and symptoms can include fatigue, restless leg syndrome, cold hands and feet, pale skin, fatigue, shortness of breath and chest pain (NIH, 2016). Other symptoms can also include brittle nails, cracks in oral mucosa, tongue swelling, swelling of the spleen, and frequent infections (NIH, 2016). Infants and young children frequently exhibit behavioral problems, delayed growth and development, pica, and lack of appetite (NIH, 2016). If severe iron-deficiency anemia persists over an extended period of time, patients can also exhibit arrhythmias, enlarged heart, or heart failure (NIH, 2016).

As discussed previously, the main causes of iron-deficiency anemia include malnutrition, chronic bleeding, helicobacter pylori or an absorption problem in the gastrointestinal tract (NIH, 2016). Currently, the environmental and lifestyle factors have affected increased rates of anemia. After the earthquake in 2010 in Haiti, the average number of meals per person has decreased from 2.46 meals per day to 1.58 meals per day (USAID, 2014). This is due to destruction of crops, inflation due to political instability, poor infrastructure, poor resource management, and increasing price of food. Due to the decreased number of meals there has been a decline in nutritional health and well-being. With the unemployment and underemployment rate hovering at 67% and the average yearly income of \$1,800 USD it is very challenging for families to afford food (CIA, 2016).

Intestinal parasites are a secondary environmental and lifestyle factor that can be treated. Intestinal parasites can create an absorption problem of micronutrients including iron in the gastrointestinal tract. An average of 50-70% of Haitian children suffer from intestinal parasites

(USAID, 2013). These parasites are transmitted through contaminated food, water, soil, and produce. The most common parasites in Haiti include *ascaris lumbricoides* (large roundworm), *necator americanus* (hookworm), and *trichuris trichiura* (whipworm) (Karabanow, 2017). These parasites can directly affect the absorption of iron. This, in turn, affects the availability of iron stores and alters the production of healthy red blood cells which can contribute to iron-deficiency anemia.

Project Plan: I propose a primary and secondary screening plan that will be used in pediatric health clinics or schools in Haiti with parental consent. It is essential that all patients be screened due to the enormous prevalence of iron-deficiency anemia in Haiti. The reported prevalence of 65% of children between the ages of six months- five years of age in Haiti have the disease (EMMUS-V, 2012). An average of 50-70% of Haitian children also suffer from intestinal parasites (USAID, 2013). All patients will be screened by using a WHO color scale Hgb paper test by using capillary blood obtained by a finger stick test. These finger-stick tests can be obtained by trained non-essential healthcare personnel. This test can be performed and analyzed in minutes and has relatively high sensitivity and specificity for their cost of less than \$0.01 complete. The personnel will be trained on the device and educated about the cost of the supplies.

Pediatric patients will be assessed by a nurse practitioner or medical doctor and treated for iron-deficiency anemia using the WHO guidelines criteria. The pediatric patient will receive liquid suspension or iron tablets for a period of four weeks as well as treatment for intestinal parasites should they meet the criteria for having iron-deficiency anemia. Education will be completed with the pediatric patient and their parent. They will be educated that they have the right to refuse medication at any time. Benefits of Hgb level screening for iron-deficiency

anemia in developing countries and iron supplementation was proven in a recent meta-analysis to outweigh potential risks (Neuberger, et al., 2016). All pediatric patients will be treated empirically for helminths using broad-spectrum benzimidazoles per WHO guidelines, unless treated elsewhere in the last six months (WHO, 2017).

Results: Benchmarking measures used were appropriate for this project. MUAC proved to be an appropriate screening tool. Of the 129 pediatric patients screened, no children were at risk for acute malnutrition (middle upper arm circumference 13.5 or greater). All receive an extra meal, five days a week while in school for free through The Rosemila Project Feeding Program. This could have contributed to this number. 104 out of 129 pediatric patients (80%) received preventative chemotherapy for helminths. The remaining 27 patients either did not return to clinic, already received treatment within the past six months, or refused. 10 pediatric patients either refused or were unable to obtain Hgb levels. Of the 119 pediatric patients where Hgb levels were obtained, 58% (n=69) were diagnosed with iron deficiency anemia and subsequently treated with oral iron supplementation for a period of four weeks. 4% (n=5) of the pediatric patients in this pilot study were diagnosed with severe anemia. The average Hgb level was 10.23 (n=119).

Final Manuscript

Screening for Iron-Deficiency Anemia in the
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by

Cara Fratianni

HAHN SCHOOL OF NURSING AND HEALTH SCIENCE
UNIVERSITY OF SAN DIEGO

I. Introduction

As Haiti continues to struggle to recuperate from the massive earthquake in 2010, the country still faces enormous health disparities as the poorest country in the western hemisphere (USAID, 2014). Over half of the population lives on less than one dollar per day and about 80% of the population lives on less than two dollars per day (USAID, 2014). The average amount spent on healthcare per capita in Haiti is \$13.00 US annually (Charles, 2017). Approximately 30% of the population is considered food insecure and 15% is severely food insecure (USAID, 2017). The country struggles with some of the highest child mortality rates in the world due to poverty, malnutrition, accidental death, domestic violence, and disease. According to the most recent Demographic and Health Survey (EMMUS-VI, 2018), approximately 1 of every 10 children will die before reaching age five (IHE and ICF 2017).

Malnutrition contributes significantly to the problem of iron-deficiency anemia, with one in four children exhibiting stunting of growth due to moderate or severe malnutrition (USAID, 2018). Iron-deficiency anemia is a huge problem in Haiti, with a reported prevalence of 65% of children between the ages of six months- five years of age having the disease (EMMUS-V, 2012). Over the past 10 years in Haiti, the prevalence of iron-deficiency anemia in the pediatric population has increased from 61% to 66% (USAID, 2018).

II. Background and Evidence for the Problem

Some of the causes of iron-deficiency anemia can include malnutrition, chronic bleeding, helicobacter pylori or an absorption problem in the gastrointestinal tract (NIH, 2016). What is iron-deficiency anemia? It is a disease that occurs when the body has a lower than normal number of red blood cells in the body. There is a reduction in both red blood cell mass and a drop in hemoglobin (Hgb) level (NIH, 2016). The World Health Organization defines anemia as

a Hgb level of less than 11 for children 6-59 months of age, Hgb less than 11.5 for children 5-11, Hgb less than 12 for children 12-14 and non-pregnant women, and Hgb less than 13 for men ages 15 and older (WHO, 2011). Severe anemia includes Hgb level of less than 7 for children 6-59 months of age and Hgb level of less than 8 for children 5-14, non-pregnant women, and men ages 15 and older (WHO, 2011). It generally takes an extended period of time for iron-deficiency anemia to occur. The body needs iron to build healthy red blood cells. When the body is lacking in iron, it begins using up the iron stores and less red blood cells are produced (NIH, 2016).

Infants, young children, and women of childbearing age are at highest risk for iron-deficiency anemia (NIH, 2016). Signs and symptoms can include fatigue, restless leg syndrome, cold hands and feet, pale skin, fatigue, shortness of breath and chest pain (NIH, 2016). Other symptoms can also include brittle nails, cracks in oral mucosa, tongue swelling, swelling of the spleen, and frequent infections (NIH, 2016). Infants and young children frequently exhibit behavioral problems, delayed growth and development, pica, and lack of appetite (NIH, 2016). If severe iron-deficiency anemia persists over an extended period of time, patients can also exhibit arrhythmias, enlarged heart, or heart failure (NIH, 2016).

A Qualitative Study with The Rosemila Project

A qualitative study that consisted of semi-structured interviews and participant observation was conducted over a two-month period (Crane, 2014). This study examined the availability of food in households of students in the feeding program as well as staff members who worked for the feeding program. Participants interviewed included all five staff members of The Rosemila Project Feeding program, all five teachers at the elementary school and 9 parents whose children were enrolled in the program (2014). The applied anthropological study highlighted the importance of creating a “sharing network” and discussed the Haitian concepts of

possessions. People who are blessed with more resources must assist family members and friends with less resources. In essence, there is no real concept of possession unless you need it for immediate survival. Of the nine parents/guardians Crane interviewed, none reported a stable source of income (2014). Five were single mothers, one was a married mother, one was a married father, one was an unmarried aunt and one was an unmarried cousin (2014). All reported difficulties in providing adequate food for their children, and 46% directly blamed a lack of stable income for their children's health problems (2014). One parent reported that she had no way to feed her children regularly aside from the feeding program (2014). When asked the question, "how do you feed your child?" five parents reported asking family members or neighbors to assist them on a regular basis and two of the subjects were themselves caring for a family member's child (the aunt and the cousin) (2014). The one parent who could not feed her children reported that she was new to the area and had not built a sharing network (2014). Building networks is a delicate social process and without the foundational tier of the family to begin with, it can be very difficult.

Genetic markers linked to iron-deficiency anemia

Iron-deficiency anemia has not been linked to genetic markers, however, there is a very rare subset of this disease called iron-refractory deficiency anemia (IRDA), meaning resistant to oral iron and intravenous iron (NIH, 2017). The prevalence of IRDA is estimated to be less than one in 1,000,000 people (Poggiali, Andreozzi, Nava, Consonni, & Graziadei, 2015). Only 53 cases have been reported from 35 families of varying ethnicities (Poggiali et al., 2015). Forty-three mutations on the Tmprss6 gene have been identified, a polymorphism which is believed to affect the absorption of iron, Hgb level, and erythrocyte volume (Poggiali et al., 2015). Tmprss6 helps the body make a protein called maltripase-2 which helps regulate iron levels

(NIH, 2017). Iron-deficiency anemia is a massive problem worldwide and these exciting new advances to the human genome project bring hope for better treatment options and understanding about the disease.

Environmental and lifestyle factors linked to iron-deficiency anemia

As discussed previously, the main causes of iron-deficiency anemia include malnutrition, chronic bleeding, helicobacter pylori or an absorption problem in the gastrointestinal tract (NIH, 2016). The main environmental and lifestyle factor that can be controlled is nutritional status. After the earthquake in 2010 in Haiti, the average number of meals per person has decreased from 2.46 meals per day to 1.58 meals per day (USAID, 2014). This is due to destruction of crops, inflation due to political instability, poor infrastructure, poor resource management, and increasing price of food. With the unemployment and underemployment rate hovering at 67% and the average yearly income of \$1,800 USD it is very challenging for families to afford food (CIA, 2016).

Haitians have a very low caloric intake. Haitians typically consume a diet of simple carbohydrates that is high in sugar, high in fat and includes many packaged foods imported from the Dominican Republic and the United States. Their standard diet tends to lack in protein, fiber, complex carbohydrates and vegetables. Meals are not served to students during the school day unless there is a feeding program at the school sponsored by foreign aid. During pregnancy, it is reported that only 30% of Haitian women meet the recommended daily intake of iron, which is 27 milligrams (USAID, 2014). This is problematic because the lack of iron consumption can contribute to anemia and complications for both the mother and her child. Only 11% of children in Haiti meet the recommended daily dose of iron from birth-18 years of age which varies from seven milligrams to 18 milligrams and adjusts for both age and gender (USAID, 2014).

Intestinal parasites are a secondary environmental and lifestyle factor that can be treated. Intestinal parasites can create an absorption problem of micronutrients including iron in the gastrointestinal tract. An average of 50-70% of Haitian children suffer from intestinal parasites (USAID, 2013). These parasites are transmitted through contaminated food, water, soil, and produce. The most common parasites in Haiti include *ascaris lumbricoides* (large roundworm), *necator americanus* (hookworm), and *trichuris trichiura* (whipworm) (Karabanow, 2017). These parasites can directly affect the absorption of iron. This, in turn, affects the availability of iron stores and alters the production of healthy red blood cells which can contribute to iron-deficiency anemia.

Parasites can be treated easily and inexpensively, however, with severe sanitation problems in Haiti, they are a recurrent issue. Eighty percent of school-aged children in Haiti do not know what causes the parasites, 60% of schools do not have access to a bathroom, and 40% of schools have no access to drinking water (EMMUS-V, 2012). It is estimated that 65% of households in Haiti do not have access to clean drinking water (EMMUS-V, 2012). A third environmental and lifestyle factor that can be addressed is heavy bleeding due to menstrual periods in young school-aged adolescents ages 12-18. In an already malnourished and anemic female this can significantly lower her Hgb level over an extended period of time. Females will also have higher iron supplementation requirements during this time. The combination of these environmental and social obstacles, extreme poverty, lack of education, and lack of access to healthcare are key factors linked to pediatric iron-deficiency anemia in Haiti. These extreme obstacles also make it a very challenging disease to address.

Review of Literature

Review of the literature was performed using Cochrane, CINAHL, PubMed, ProQuest, Google Scholar, and the University of San Diego online catalog were utilized using the keywords anemia, iron-deficiency, malnutrition, pediatric, and Haiti. Inclusion criteria includes articles written in the English language, peer reviewed articles, and articles written in the past 10 years. The original search yielded 152 articles. A total of 47 references were reviewed and 15 were used in the final proposal. Articles reviewed include systematic reviews, randomized controlled trials, quasi-experimental studies/qualitative studies, clinical practice guidelines, case reports, and opinion/reviews of nationally recognized experts. The quality of evidence ranked from level one to level five using the John's Hopkins Evidence Level and Quality Guide (John's Hopkins, 2018).

III. Evidence-Based Intervention

Screening recommendations for iron-deficiency anemia

The International Union of Nutritional Sciences (IUNS) works hand in hand with the World Health Organization (WHO) to create a task force to research and write the most current policies pertaining to iron-deficiency anemia and other diseases related to malnutrition in developing countries. The WHO recommends screening of all children, if available, and iron supplementation or multivitamin powder to be universally distributed in regions where iron-deficiency anemia is problematic (WHO, 2014). Iron-deficiency is most serious in children less than two years of age and the risk versus benefit associated with this age group must be thoroughly evaluated (IUNS, 2015).

There was recent concern and debate among the medical community that iron supplementation in regions where malaria is endemic could increase the risk of malaria (IUNS, 2015). In several randomized clinical trials it was shown that increased iron levels in the blood

may promote the growth of the *plasmodium* parasite that causes malaria (IUNS, 2015). This was disproven in a meta-analysis of 35 randomized controlled trials in malarial endemic regions which included 31,955 children (Neuberger, Okebe, Yahav, & Paul, 2016). Other potential risks include risk of a fatal iron overdose, either due to lack of education provided to the child's parents or guardians or overdose by accidental ingestion (IUNS, 2015).

Sensitivity and specificity of current methods and recommendations

As developing countries do not have access to expensive and high-tech laboratories, the WHO recommends a single and inexpensive test which is a Hgb level (WHO, 2011). A simple paper-based test is available for underserved populations with little or no access to power. The paper-based testing allows results to be taken with a finger-stick lancet. The drop of blood is placed upon special chromatography paper and the color of the blood stain is matched to a corresponding chart to quantify Hgb levels (Yang, Piety, Vignes, Benton, & Kantor, 2013). This test can be completed within 1-2 minutes, however, it can be subject to human error.

In an experimental study, researchers compared Hgb results using this paper-based method against a hematology analyzer by using blood samples on 54 subjects (Yang, Piety, Vignes, Benton, & Kantor, 2013). Yang et al. states, "The values of Hgb measured using the paper-based assay and the comparison method were highly correlated ($R^2 = 0.9598$). The paper assay was accurate within 1 g/dL 90.7% of the time, overestimating Hgb by ≥ 1 g/dL in 1.9% and underestimating Hgb by ≥ 1 g/dL in 7.4% of the subjects" (pg 1513, 2013). It costs less than 0.7 US cents per Hgb paper test. A Hgb point-of-care analyzer costs anywhere from \$800-\$15,000 depending upon the quality purchased and \$0.02- \$3.67 per test (Yang, et al., 2013). Paper testing is recommended for developing nations with poor access to healthcare and financial resources (Yang, et al., 2013). When a Hgb point-of-care analyzer is used, a HemoCue device is

recommended due to its ease of use, portability, and moderate cost (Yang, et al., 2013). The WHO paper testing color scale has a 91% sensitivity and 86% specificity when compared against a laboratory Hgb test (Lewis, Stott, & Wynn, 1997). Unfortunately, sensitivity and specificity has not been tested more recently. Both moderate and severe levels of anemia were identified with an efficiency of 89% (Lewis et al., 1997). Lewis et al. noted that non-medical and non-laboratory staff were able to be trained to use the WHO paper testing color scale effectively and efficiently after a brief training (1997).

Chemotherapy (deworming) is a key component in the management of iron-deficiency anemia in developing countries. Soil-transmitted helminths impair the nutritional status of the people they infect in multiple ways. The worms feed on host tissues, including blood, which leads to a loss of iron and protein (WHO, 2017). Hookworms, in addition, cause chronic intestinal blood loss that can result in anemia. Preventive chemotherapy, using biannual single-dose albendazole (400 mg) or mebendazole (500 mg) is recommended as a public health intervention for all young children (12-23 months of age), preschool (24-59 months of age) and school-age children living in areas where the baseline prevalence of any soil-transmitted infection is 50% or higher among children, in order to reduce the worm burden of soil-transmitted helminth infections (strong recommendation, low-quality evidence). A half-dose of albendazole (i.e. 200 mg) is recommended for children younger than 24 months of age (WHO, 2017). This means that even children not currently experiencing symptoms are still treated based on evaluation of risk (WHO, 2017). This medication is known to kill most helminths including roundworm, whipworm, pinworms, flatworms, trichinosis, and tapeworms (CDC, 2016). Pinworms will require a second dosing in two weeks because it does not kill the eggs (CDC, 2016). Side effects include headache, dizziness, nausea, vomiting, diarrhea, and abdominal pain

(UpToDate, 2020). Adverse effects include acute renal failure, acute hepatic failure, and leukopenia.

IV. Establish Benchmark

The WHO's criteria for anemia will be used. As stated previously, the World Health Organization defines anemia as a Hgb level of less than 11 for children 6-59 months of age, Hgb less than 11.5 for children 5-11, Hgb less than 12 for children 12-14 and non-pregnant women, and Hgb less than 13 for men ages 15 and older (WHO, 2011). Severe anemia includes Hgb level of less than 7 for children 6-59 months of age and Hgb level of less than 8 for children 5-14, non-pregnant women, and men ages 15 and older (WHO, 2011).

For benchmarking purposes, data will primarily be compared to the Emmus-VI report, a health survey of 1.2 million Haitian children conducted in collaboration with USAID, UNICEF, and the WHO (EMMUS, 2018). Please refer to previous statistics reported.

Table 1. **Gap Analysis**

Resources	Cost	Rationale
Education and Training	\$0.00	RN and NP students were trained by RN student Cara Fratianni. All training was done on a voluntary basis. Training was done over 2 information sessions and took a total of 10 hours.
Chart Documents	\$200.00	Documents including written consent, growth chart, paper chart documentation, Manilla chart
Medications	\$550.52	It required nine gallons of liquid iron suspension to medicate 73 anemic children for one month. Liquid iron suspension was \$34.00 US /gallon for a total of \$306.00 per month. The seven older pediatric patients who were able to tolerate ferrous sulfate pills cost an additional \$12.60 for the month. This equated to a total of \$318.60 for medication expenses for anemia.

		104 children were also treated for intestinal parasites at a cost of \$2.23 per person, for a total of \$231.92.
Medical Supplies	\$719.00	Hemocue (\$346) Hgb color scale and Tallquist paper (\$28 for scale and 150 test sheets) Lancets (\$50 for 200) Gloves (\$75 for 500) Gauze 2x2 (\$20 for 200) Additional medical supplies (\$200)
Personnel	\$500.00	Medical interpreter services cost \$500 total for 10 days and provided three interpreters.
Total cost	\$2,469.52	EBP project: Full health assessments on 129 Haitian children including screening for iron-deficiency anemia and treatment for soil-based helminths.
Benefit	Cost	Rationale
Total health care cost savings of each pediatric hospital admission	\$100.24-175.42	The average cost for hospitalization in Haiti is \$25.06 US at a high-level facility not including tests or medications (McBain, et al., 2018). The average length of stay for a pediatric severe anemia patient is four days and the average length of stay for a pediatric malnutrition patient is seven days. (Malek, Hashemi, Anjomrooz, Torabi, & Imani, 2019). This equates to \$100.24-175.42 per admission not including labs or medication.
Total Savings	UTA	Unable to adequately assess.
Quality of Life Benefits	Although this program has high cost, the savings are invaluable. This iron-deficiency screening and treatment program in combination with chemotherapy for soil-based helminths has the potential to save children's lives.	

V. PICOT Question

Does screening for prevalence of iron deficiency anemia in the pediatric population (ages 1-17) in Gonaives Haiti over a period of 2 weeks compare to the data collected in a large scale health survey conducted by EMMUS and the WHO?

Purpose

The purpose of this pilot project is to screen for iron-deficiency anemia in pediatric patients (ages 1-17) in a primary school in Gonaïves, Haiti. Patients with anemia will be treated with oral supplemental iron for a period of four weeks according to WHO guidelines (WHO, 2011). All students will be treated empirically for helminths per WHO guidelines, unless treated elsewhere in the last six months (WHO, 2017). Nutritional status will also be assessed using MUAC according to WHO guidelines (2017).

Limitations

Post-data was not collected due to the brief duration of this academic medical mission trip (two weeks). It was conducted December 2014-January 2015 with 10 University of San Diego faculty, Master's Entry Program in Nursing students, and a Nurse Practitioner student. Additionally, due to a level four United States travel advisory in 2019 and 2020, post-data could not be collected.

VI. EBP Model

The Iowa Model is widely used, reputable, easy to follow, and uses a multidisciplinary approach. The Iowa Model assesses quality control measures and evaluates research utilization. The Iowa Model takes into account important steps such as how to develop a team, how to assemble a body of research, how to evaluate financial data, and how to address senior leadership and stakeholders (Gawlinski & Rutledge, 2008). The Iowa model is favorable to many institutions due to its ease of use, adaptability, use of multidisciplinary team approach, evaluation of risk management, and extensive evaluation of research (Melnik & Fineout-Overholt, 2015).

The Iowa Model combines a quality assurance model with research utilization (Barger, 2017). This model encourages clinicians to question current clinical practice, identify knowledge focused and problem focused triggers, and think critically to identify chances for improvement

(2015). The model has 10 key steps; however, it focuses predominantly on three key questions: Is this topic a priority for the organization? Is there sufficient support? Is change appropriate for adaptation in practice? Multidisciplinary team members should identify their strengths and skills and clearly communicate them to their team. The team needs to connect with stakeholders and evaluate if senior leadership will support the project. Once a team is developed and leadership supports the project, the team needs to collaborate and evaluate the research evidence. Once the evidence is sufficient, the practice change can be piloted (2015). After the practice is implemented, the results must be monitored, appropriate feedback must be given, and the results must be disseminated to see if the change was indeed effective.

VII. Project Implementation/Process Plan

I propose a primary and secondary screening plan that will be used in pediatric health clinics or schools in Haiti with parental consent. It is essential that all patients be screened because of the enormous prevalence of iron-deficiency anemia in Haiti. There is a reported prevalence of 65% of children between the ages of six months- five years of age in Haiti have the disease (EMMUS-V, 2012). An average of 50-70% of Haitian children also suffer from intestinal parasites (USAID, 2013). All patients will be screened by using a WHO color scale Hgb paper test by using capillary blood obtained by a finger stick test. Finger-stick tests can be completed by trained, non-essential healthcare personnel. This test can be performed and analyzed in minutes and has relatively high sensitivity and specificity for their cost of less than \$0.01 complete. The personnel will be trained on the device and educated about the cost of the supplies.

Pediatric patients will be assessed by a nurse practitioner or medical doctor and treated for iron-deficiency anemia using the WHO guidelines criteria. The pediatric patient will receive

liquid suspension or iron tablets for a period of four weeks as well as treatment for intestinal parasites should they meet the criteria for having iron-deficiency anemia. Education will be completed with the pediatric patient and their parent. They will be educated that they have the right to refuse medication at any time. Benefits of Hgb level screening for iron-deficiency anemia in developing countries and iron supplementation was proven in a recent meta-analysis to outweigh potential risks (Neuberger, et al., 2016). All participants will be treated empirically for helminths using broad-spectrum benzimidazoles per WHO guidelines, unless treated elsewhere in the last six months (WHO, 2017).

VIII. Evaluation Plan

Data management

Patient's charts were kept in a locked storage cabinet in a storage facility. Only the lead researcher had access to the original charts. Data was de-identified using the "safe harbor method" and re-identified in accordance with the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rule (United States Department of Health and Human Services, 2020). The HIPAA Privacy Rule protects most "individually identifiable health information" held or transmitted by a covered entity or its business associate, in any form or medium, whether electronic, on paper, or oral. Protected health information includes demographic information, which relates to: the individual's past, present, or future physical or mental health or condition, the provision of health care to the individual, or the past, present, or future payment for the provision of health care to the individual, and that identifies the individual or for which there is a reasonable basis to believe can be used to identify the individual (2020). Protected health information includes many common identifiers (e.g., name, address, birth date,

Social Security Number, medical record number) when they can be associated with the health information listed above (2020).

Sustainability Plan

The Rosemila Project non-profit organization hopes to partner with University of San Diego for medical missions in the future. Monthly measurements would be more sustainable if the organization could partner with the Haitian nursing school in close proximity to the school and orphanage.

Evaluation of Intervention & Outcomes

Th metrics of age, gender, and school vs orphanage were tracked. Other outcome measures that were tracked included MUAC scores to assess nutritional status in pediatric patients. Hemoglobin level were also assessed. For this pilot project, all participants were treated empirically for helminths using broad-spectrum benzimidazoles per WHO guidelines, unless treated elsewhere in the last six months (WHO, 2017). All participants who had anemia were treated with oral iron for a period of four weeks using WHO criteria (WHO, 2011). Please bear in mind the limitations of this pilot study as discussed previously. Improvement of the future would include assessment of hemoglobin levels every four to six weeks for those children being treated for iron deficiency anemia (WHO, 2011).

Comprehensive analysis

The purpose of this pilot is screening a pediatric population for iron deficiency anemia and assessing if the prevalence is comparable to the previous data collected in recent large health surveys of 66% (EMMUS-VI, 2017). The biggest hurdles include taking this data and creating a

treatment program where these patients are assessed by a health care provider every four to six weeks. This will take additional funding and assembly of a large and consistent team on the ground in Gonaïves, Haiti. Relying on health care providers from the United States is not sustainable nor feasible on a monthly basis. This also does not support or stimulate the Haitian economy.

IX. Begin Implementation of Evidence-Based Project

The data was conducted December 2014-January 2015 with 10 University of San Diego faculty, Master's Entry Program in Nursing students, and a Nurse Practitioner student. Data has been de-identified and kept in a locked cabinet where DNP student Cara Fratianni is the only one with access. This project was an evidenced-based project using retrospective data to screen for anemia in Gonaïves, Haiti in the pediatric population. CITI Human Subjects Researcher Training was completed by Cara Fratianni as a pre-licensure RN student in 2014 and again in 2019. IRB was submitted to University of San Diego retrospectively February 20th 2020 and approved February 24th, 2020.

X. Completion of Evidence-Based Project

The medical team from University of San Diego departed from Gonaïves, Haiti in early January, 2015. The pediatric patients who were medicated for iron-deficiency anemia completed their four weeks of treatment by February 14th, 2015. This concluded the evidence-based intervention. Data was not was not processed until IRB approval was received after February 24th, 2020.

XI. Evaluation of Evidence-Based Intervention(s) & Outcome(s)

Benchmarking measures used were appropriate for this project. MUAC proved to be an appropriate screening tool. Of the 129 pediatric patients screened, no children were at risk for

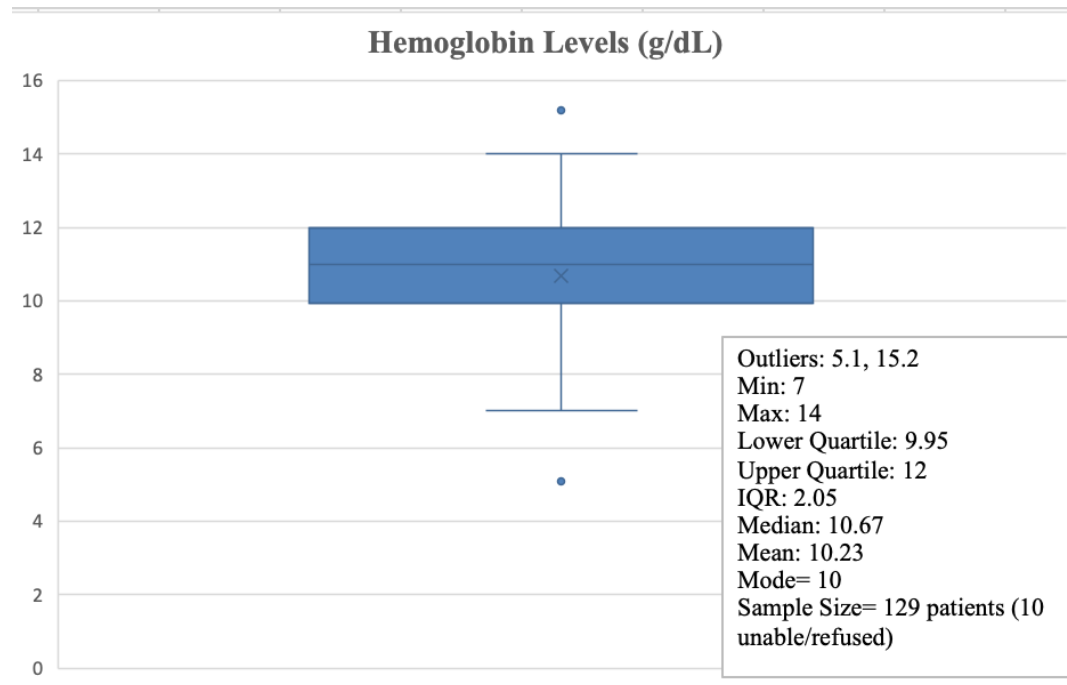
acute malnutrition (middle upper arm circumference 13.5 or greater). All receive an extra meal, five days a week while in school for free through The Rosemila Project Feeding Program. This could have contributed to this number. 104 out of 129 pediatric patients (80%) received preventative chemotherapy for helminths. The remaining 27 patients either did not return to clinic, already received treatment within the past six months, or refused. Please refer to table 1 for data on pediatric anemia.

Table 2. **Anemia Screening**

Age	Severe Anemia	Anemia	None	Unable/Refused
6-59 months of age	1	29	19	3
Children 5-14	4	35	25	6
Males ages 15 and older	0	0	6	1
TOTAL (n=129 students) =	5	64	50	10

10 pediatric patients either refused or were unable to obtain Hgb levels. Of the 119 pediatric patients where Hgb levels were obtained, 58% (n=69) were diagnosed with iron deficiency anemia and subsequently treated with oral iron supplementation for a period of four weeks. 4% (n=5) of the pediatric patients in this pilot study were diagnosed with severe anemia. The average Hgb level was 10.23 (n=119).

Table 3. Hemoglobin Levels



XII. Evaluation Results

Sustainability Plan

It is logistically and financially unsustainable to lead mission trips to collect anemia data, measurements, and administer treatment. Hemoglobin testing would need to be conducted every four to six weeks on patients being treated with oral supplemental iron. Currently, a Haitian RN is paid to come to the feeding program one time a month to measure height and weight of children. This is sustainable, but dependent on private donations. It is a lot of work for one person to assemble around 200 children and gather measurements. She is unable to manage hemoglobin tests and administration of oral supplemental iron in addition to her monthly tasks she assists with the feeding program. The workload would be unsustainable with her other duties in the community. In the future, the measurements would be more sustainable if the organization could partner with the Haitian nursing school next door to assist. The Rosemila Project does hope to lead mission trips one time annually for full head-to-toe health screenings. This would

entail a trip of 10-15 pre-licensure RN students, DNP students, and faculty for periods of two to four weeks.

Cost/Benefit Analysis

It required 9 gallons of liquid iron suspension to medicate 73 anemic children for one month. The cost is \$34.00 US /gallon for a total of \$306.00 per month. The seven older pediatric patients who were able to tolerate ferrous sulfate pills cost an additional \$12.60 for the month. This equates to a total of \$318.60 for medication expenses for anemia. 104 children were also treated for intestinal parasites at a cost of \$2.23 per person, for a total of \$231.92. The cost to treat 80 pediatric patients for anemia for one month and 104 pediatric patients for intestinal parasites for three-six months equates to \$550.52. This equates to \$2.99 per condition/child/month. The Hemocue (\$346), Hgb color scale and Tallquist paper (\$28 for scale and 150 test sheets), lancets (\$50 for 200), gloves (\$75 for 500), and gauze 2x2 (\$20 for 200). Additional medical supplies cost approximately \$200. Medical interpreter services cost \$500 total for 10 days and provided three interpreters. Medical supplies and interpretation cost was \$1,219.00. The total cost of this project is \$1,769.52 US. All of these costs were covered by donations.

The average cost for hospitalization in Haiti is \$25.06 US at a high-level facility not including tests or medications (McBain, et al., 2018). The average length of stay for a pediatric severe anemia patient is four days and the average length of stay for a pediatric malnutrition patient is seven days. (Malek, Hashemi, Anjomrooz, Torabi, & Imani, 2019). This equates to \$100.24-175.42 per admission not including labs or medication.

XIII. Conclusions

Malnutrition contributes significantly to the problem of iron-deficiency anemia in Haiti, with one in four children exhibiting stunting of growth due to moderate or severe malnutrition (USAID, 2018). No pediatric patients in our study exhibited malnutrition (n=129). These pediatric patients have been receiving one meal per day, five days a week while in school through The Rosemila Project feeding program for two and a half years. This may have contributed to the drastically different percentage from USAID's health survey (2018).

Iron-deficiency anemia is an enormous problem in Haiti, with a reported prevalence of 65% of children between the ages of six months- five years of age having the disease (EMMUS-V, 2012). Over the past 10 years in Haiti, the prevalence of iron-deficiency anemia in the pediatric population has increased from 61% to 66% (USAID, 2018). In our pilot program and survey of 129 pediatric Haitian students, 58% of the students were found to have iron deficiency anemia. This is lower than the 65-66% prevalence in the pediatric Haitian population as gathered by a large health survey (EMMUS-V, 2012; USAID, 2018).

Malnutrition is not a contributing factor in this specific population according to MUAC score. Our pediatric population could, however, be consuming a diet low in iron. Only 11% of children in Haiti meet the recommended daily dose of iron from birth-18 years of age which varies from seven milligrams to 18 milligrams and adjusts for both age and gender (USAID, 2014). Another confounding factor could be the prevalence of soil-based helminths. An average of 50-70% of Haitian children also suffer from intestinal parasites (USAID, 2013). This is another cause of iron-deficiency anemia.

XII. Implications for Clinical Practice

The primary and secondary screening plan that was used in this pilot program can be successfully implemented in pediatric health clinics or schools in Haiti with parental consent.

Measures of age, MUAC, Hgb, height, and weight were adequate evidence-based measurement tools. The biggest barrier to this program is maintenance of health screenings every four to six weeks. There is low sustainability and high costs of this intervention unless a partnership can be obtained on the ground in Gonaïves, Haiti. All life is invaluable, specially the life of a child. Efforts must be made to continue to screen and treat this vulnerable population. Lack of adherence to guidelines leads to increased rates of hospitalization for moderate and severe anemia and increased risk of cognitive effects, stunting, or death. Improved adherence of the WHO guidelines for treatment of iron-deficiency anemia and preventative chemotherapy to control helminth infections in at risk population groups will lead to optimal patient outcomes.

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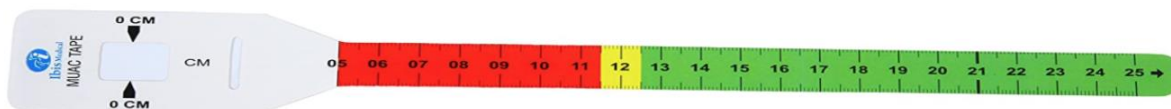
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Appendices

Appendix A

Evaluation Tools



Middle Upper Arm Circumference (WHO, 2017).

Appendix B

Tables

Table 1. Gap Analysis

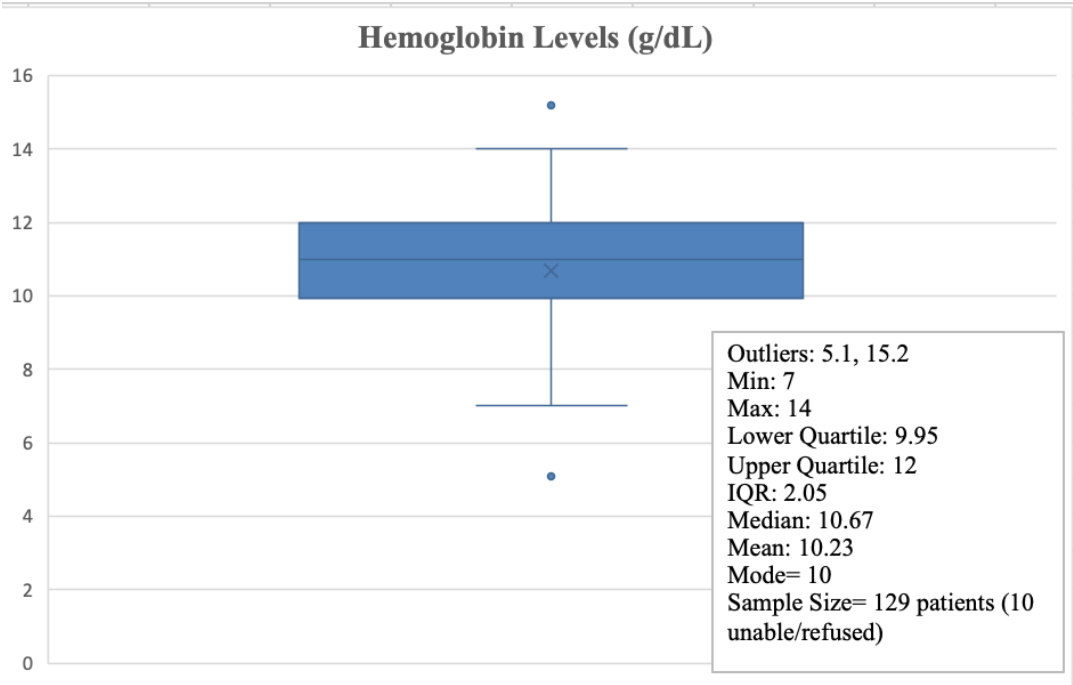
Resources	Cost	Rationale
Education and Training	\$0.00	RN and NP students were trained by RN student Cara Fratianni. All training was done on a voluntary basis. Training was done over 2 information sessions and took a total of 10 hours.
Chart Documents	\$200.00	Documents including written consent, growth chart, paper chart documentation, Manilla chart
Medications	\$550.52	<p>It required nine gallons of liquid iron suspension to medicate 73 anemic children for one month. Liquid iron suspension was \$34.00 US /gallon for a total of \$306.00 per month. The seven older pediatric patients who were able to tolerate ferrous sulfate pills cost an additional \$12.60 for the month. This equated to a total of \$318.60 for medication expenses for anemia.</p> <p>104 children were also treated for intestinal parasites at a cost of \$2.23 per person, for a total of \$231.92.</p>

Medical Supplies	\$719.00	Hemocue (\$346) Hgb color scale and Tallquist paper (\$28 for scale and 150 test sheets) Lancets (\$50 for 200) Gloves (\$75 for 500) Gauze 2x2 (\$20 for 200) Additional medical supplies (\$200)
Personnel	\$500.00	Medical interpreter services cost \$500 total for 10 days and provided three interpreters.
Total cost	\$2,469.52	EBP project: Full health assessments on 129 Haitian children including screening for iron-deficiency anemia and treatment for soil-based helminths.
Benefit	Cost	Rationale
Total health care cost savings of each pediatric hospital admission	\$100.24-175.42	The average cost for hospitalization in Haiti is \$25.06 US at a high-level facility not including tests or medications (McBain, et al., 2018). The average length of stay for a pediatric severe anemia patient is four days and the average length of stay for a pediatric malnutrition patient is seven days. (Malek, Hashemi, Anjomrooz, Torabi, & Imani, 2019). This equates to \$100.24-175.42 per admission not including labs or medication.
Total Savings	UTA	Unable to adequately assess.
Quality of Life Benefits	Although this program has high cost, the savings are invaluable. This iron-deficiency screening and treatment program in combination with chemotherapy for soil-based helminths has the potential to save children's lives.	

Table 2. Anemia Screening

Age	Severe Anemia	Anemia	None	Unable/Refused
6-59 months of age	1	29	19	3
Children 5-14	4	35	25	6
Males ages 15 and older	0	0	6	1
TOTAL (n=129 students) =	5	64	50	10

Table 3. Hemoglobin Levels



Appendix C

IRB Approval

Date: 4-6-2020

IRB #: IRB-2020-260

Title: Screening for Iron-deficiency Anemia in the Pediatric Populations(Ages 1-17) in Gonaïves Haiti

Creation Date: 2-20-2020

End Date:

Status: **Approved**

Principal Investigator: Cara Fratianni

Review Board: USD IRB

Sponsor:

Study History

Submission Type	Initial	Review Type	Exempt	Decision	Exempt
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Key Study Contacts

Member	Sharon Kepple	Role	Co-Principal Investigator	Contact	sharonbooth-kepple@san-diego.edu
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Member	Cara Fratianni	Role	Principal Investigator	Contact	caraf-rati-ann@san-diego.edu
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Member	Sharon Kepple	Role	Primary Contact	Contact	sharonbooth-kepple@san-diego.edu
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Appendix D

Letters of Support

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January 31st, 2020

Clinical Site Letter of Support

École Jean-Marie and
Good Samaritan Orphanage
Eglise En Mission
113, Ruelle Mecklembourg
Gonaïves, Haiti

To: Institutional Review Board, University of San Diego

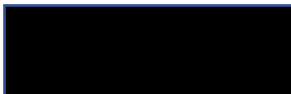
From: Pastor Maula Jean-Marie

During intercession Winter 2014-2015, Ms. Cara Fratianni led a medical mission in collaboration with University of San Diego faculty at the Hahn School of Nursing and Health Science and several Master's of Entry Program in Nursing and Doctor of Nursing Practice students. Ms. Fratianni is now requesting use of data from this medical mission for an evidence-based class project and possible presentation and publication. The topic will be a retrospective study on screening pediatric patients for anemia and intestinal parasites in a primary school and orphanage in Gonaïves, Haiti.

All data have been cleansed of any patient or institutional identifiers. I am supportive in Ms. Fratianni using this pre-collected data.

If you have any questions, please do not hesitate to contact me at: (509)-3850-0758 (cell) or maulajem23@gmail.com.

Sincerely,



2/6/2020

Pastor Maula Jean-Marie
President of École Jean-Marie and Good Samaritan Orphanage



October 01, 2019

To: Institutional Review Board, University of San Diego

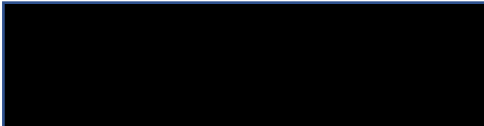
From: Dr. Sharon Boothe-Kepple, PhD, MSN, FNP-C
Clinical Associate Professor, Hahn School of Nursing and Health Science

Re: Doctor of Nursing Practice Capstone Project

I am serving as Faculty Advisor/Mentor for the DNP project titled: *Educating Providers on Clinical Practice Guidelines (CPG) Established by the Infectious Disease Society of America (ISDA) for the Diagnosis and Management of Skin and Soft Tissue Infections (SSTI)* conducted by Cara Fratianni, RN, DNP student in the Hahn School of Nursing and Health Science. I approve of this timely and important project and will be advising this student throughout the process.

If you have any questions or concerns please do not hesitate to contact me at (619) 260-2341 or sharonboothe-kepple@sandiego.edu

Sincerely,



Sharon Boothe-Kepple, PhD, MSN, FNP-C (Chickasaw)
Clinical Associate Professor, Hahn School of Nursing and Health Science

Appendix E

Conference Acceptance Letter

AAENP <aaenp.info@gmail.com>

Fri, Sep 20, 2019, 8:30 AM ☆ ↩ ⋮

to Anna, bcc: me ▾

Dear Poster Presenter,

Thank you for submitting an abstract to present your poster at AAENP's Western Conference taking place November 1st- 3rd, 2019 in Las Vegas, NV. **Congratulations, your abstract has been accepted.**

Poster presentations will occur on November 2nd, 2019 from 11:50- 1:10pm PST. If you are unable to be present at the conference, please respond to this email. Awards will be announced on November 3rd.

Lastly, to present, **please ensure that you are registered for the conference.** To register go to <https://www.aaenp-natl.org/aaenp-western-regional-conference>.

Please do not hesitate to contact us if you have any questions.

Best,

Anna Jovel

Account Executive

AAENP

480-585-6105

7729 E. Greenway Rd., #300

Scottsdale, AZ 85260

Note: Presented different DNP project at American Academy of Emergency Nurse Practitioners Western Regional Conference November 1st-3rd 2019

Educating Providers on Clinical Practice Guidelines (CPG) Established by the Infectious Disease Society of America (IDSA)
for the Diagnosis and Management of Skin and Soft Tissue Infections (SSTI)

Educating Providers on Clinical Practice Guidelines (CPG) Established by the Infectious Disease Society of America (IDSA) for the Diagnosis and Management of Skin and Soft Tissue Infections (SSTI)
Cara Frattiggi, MSN, RN, PHN, CNL
Sharon Boethe-Keeple, PhD, MSN, FNP-C, PHN
 Acknowledgements: Nicole Martinez, MSN, FNP-BC, ENP-C, PHN and Pedro Collo, DNP, RN, FNP-C, ENP-C, CCRN



Background	Purpose	Framework/EBP Model
<p>SSTIs are common dermatological infections that range from mild to severe. SSTIs account annually for \$5.5 billion dollars in health care expenditure in the United States. Current research has shown a lack of adherence to the current CPG established by the IDSA. A recent study indicated approximately 87% of patients diagnosed with an SSTI were discharged with unnecessary antibiotics.</p>	<p>This pilot project aims to re-educate 13 Nurse Practitioners and Physician Assistants on the current CPG established by the IDSA. This evidence-based practice (EBP) project will focus on the treatment of purulent SSTIs on extremities to improve both provider knowledge and patient outcomes in the Emergency Department.</p>	<p>The Iowa model was used to guide this project.</p>
<p>Evidence for Problem</p> <p>A panel of experts convened from IDSA convened to set the national CPG for diagnosis and management of SSTI in the United States. The guidelines were updated in 2014. Systematic reviews have revealed strong evidence to support the use of CPG.</p> <ul style="list-style-type: none"> IDSA guidelines utilized in 115 peer-reviewed journal articles in past five years. Use of IDSA guidelines supported by four systematic reviews in the past five years. 	<p>Project Plan Process</p> <ol style="list-style-type: none"> Provide pre-surveys to NP and PA staff (n=13) in the Emergency Department. 10-minute in-service on IDSA guidelines. Pamphlets will be placed in break room and staff areas with several facts and 1-2 simple algorithms from IDSA guidelines. Providers will fill out checklist on dx of each SSTI patient that presents to ECRMC ED for the next 4 weeks (mild, moderate, or severe SSTI on extremity and treatment selected). Provide post surveys to NP and PA staff (n=13) in the Emergency Department. 	<p>IDSA Algorithm for Management of SSTIs</p>  <p>(Infectious Disease Society of America, 2014).</p> <p>Cost-Benefit Analysis</p> <ul style="list-style-type: none"> The cost of the project is \$10 to implement. The average cost for incision and drainage of an abscess is \$592-\$936. In 2019, U.S. hospital costs averaged \$3,949 per day and hospital stays cost an average of \$15,734. On average, MRSA patients stay twice as long as patients without MRSA. The average cost of a hospital stay for a patient being treated with MRSA is \$60,000. By following the CPG guidelines, between \$3,357 to \$60,000 could be saved per patient from unnecessary hospitalizations.
<p>Evidence-Based Intervention/Benchmark</p> <ul style="list-style-type: none"> Pre and post survey In-service Use of validated checklist 	<p>Evaluation Results</p> <ol style="list-style-type: none"> Pre and post surveys will be administered to staff about CPG and SSTI knowledge, and confidence levels in adhering to the current CPG established by the IDSA or other guidelines in use. Identify the number of SSTI patients seen by advance practice providers (APPs) that presented to the 161-bed high-volume rural ED that were treated according to the current CPG established by the IDSA vs. patient treatment that did not adhere to the current guidelines, and whether or not the provider received training. Rationale will be assessed if deviation from the guidelines (i.e. homelessness, uninsured/underinsured). 	<p>Conclusions</p> <p>EBP project in progress.</p> <p>Implications for Clinical Practice</p> <p>Lack of adherence to guidelines leads to overuse of antibiotics, and increased costs and interventions due to unnecessary hospitalizations. Improved adherence to IDSA guidelines will lead to optimal patient outcomes.</p>

Guidance, C. G., Cheng, M., & Archer, A. (2018). The patient with cellulitis needs the hospitalist's support: review and meta-analysis of mortality rates of patients with cellulitis. *Journal of General Internal Medicine*, 33(1), 102-108. <https://doi.org/10.1093/gim/kwx001>

Johnson, L., Wang, L., Hsieh, C., & Hsu, L. (2018). The development and validation of knowledge, attitude and behavior (KAB) instrument to assess undergraduate students' practice readiness and adherence to the current CPG established by the IDSA for the diagnosis and management of SSTI in the United States. *Journal of General Internal Medicine*, 33(1), 102-108. <https://doi.org/10.1093/gim/kwx001>

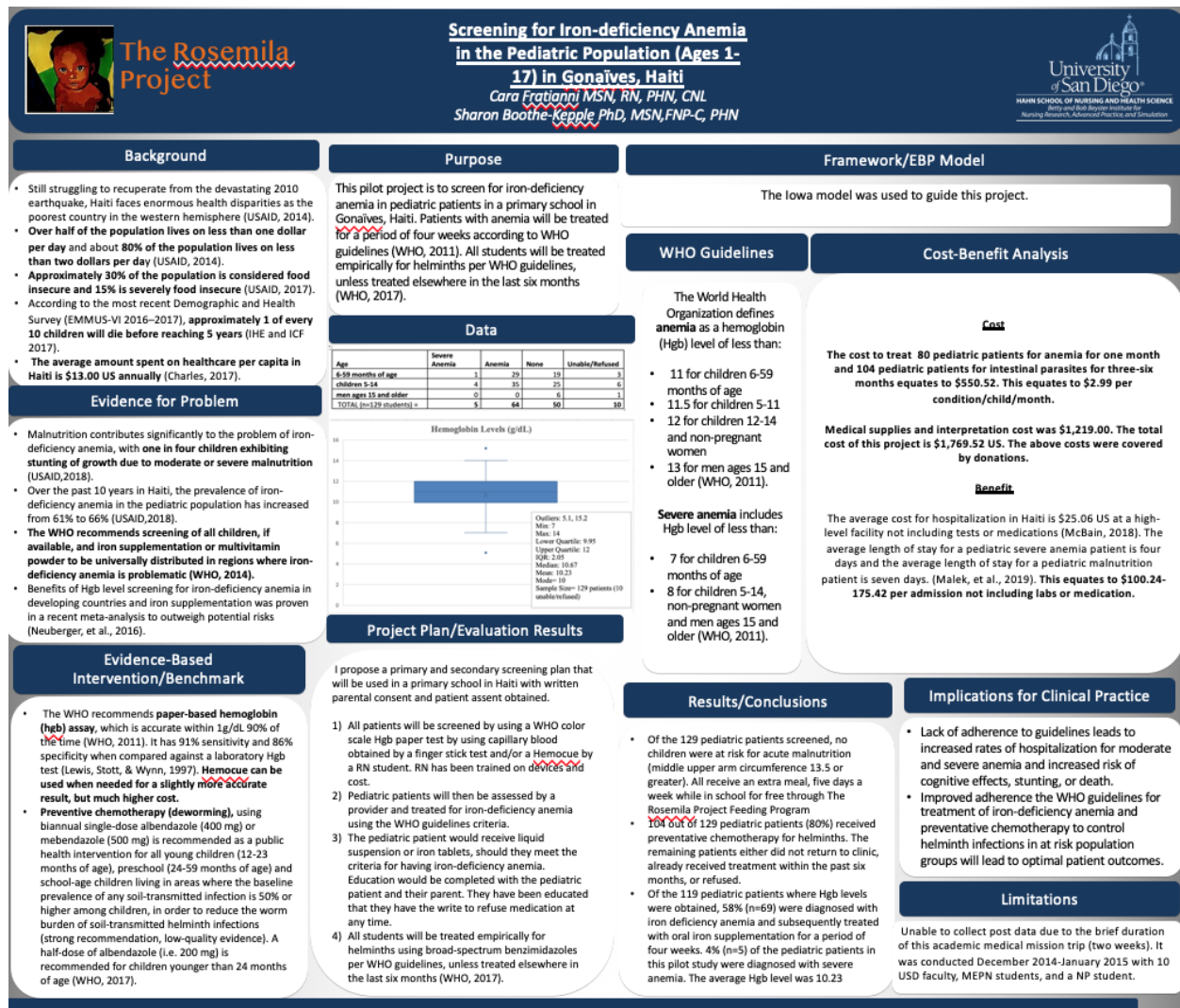
Johnson, L., Wang, L., Hsieh, C., & Hsu, L. (2018). The development and validation of knowledge, attitude and behavior (KAB) instrument to assess undergraduate students' practice readiness and adherence to the current CPG established by the IDSA for the diagnosis and management of SSTI in the United States. *Journal of General Internal Medicine*, 33(1), 102-108. <https://doi.org/10.1093/gim/kwx001>

Johnson, L., Wang, L., Hsieh, C., & Hsu, L. (2018). The development and validation of knowledge, attitude and behavior (KAB) instrument to assess undergraduate students' practice readiness and adherence to the current CPG established by the IDSA for the diagnosis and management of SSTI in the United States. *Journal of General Internal Medicine*, 33(1), 102-108. <https://doi.org/10.1093/gim/kwx001>

Johnson, L., Wang, L., Hsieh, C., & Hsu, L. (2018). The development and validation of knowledge, attitude and behavior (KAB) instrument to assess undergraduate students' practice readiness and adherence to the current CPG established by the IDSA for the diagnosis and management of SSTI in the United States. *Journal of General Internal Medicine*, 33(1), 102-108. <https://doi.org/10.1093/gim/kwx001>


Appendix F

Final Poster Presentation University of San Diego



Appendix G

PowerPoint Stakeholder Presentation



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Nursing Research, Advanced Practice, and Simulation

Screening for Iron-Deficiency Anemia in the Pediatric Population (Ages 1-17) in Gonaïves, Haiti

Cara Fratianni MSN, RN, PHN, CNL
Sharon Boothe-Kepple PhD, MSN, FNP-C, PHN

Background and Significance

- Still struggling to recuperate from the devastating 2010 earthquake, Haiti faces enormous health disparities as the poorest country in the western hemisphere (USAID, 2014).
- **Over half of the population lives on less than one dollar per day** and about **80% of the population lives on less than two dollars per day** (USAID, 2014).
- **Approximately 30% of the population is considered food insecure and 15% is severely food insecure** (USAID, 2017).
- According to the most recent Demographic and Health Survey (EMMUS-VI 2016–2017), **approximately 1 of every 10 children will die before reaching 5 years** (IHE and ICF 2017).
- **The average amount spent on healthcare per capita in Haiti is \$13.00 US annually** (Charles, 2017).

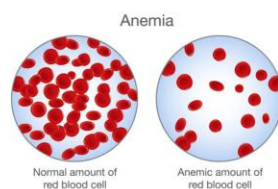
Needs Assessment

- The children in Ecole Jean-Marie/The Rosemilla Project have had access to one additional meal 5 days per week during school through the feeding program
- They have not been screened for Iron-deficiency anemia and do not are not being treated for anemia Many have never been treated for soil based helminths.



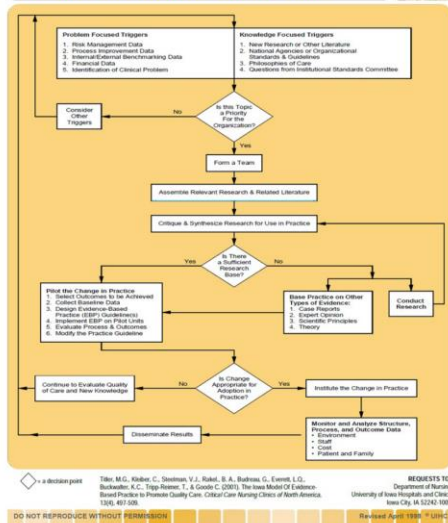
Purpose/Aims

This pilot project is to screen for iron-deficiency anemia in pediatric patients in a primary school in Gonaïves, Haiti. Patients with anemia will be treated for a period of four weeks according to WHO guidelines (WHO, 2011). All students will be treated empirically for helminths per WHO guidelines, unless treated elsewhere in the last six months (WHO, 2017).



Framework/EBP Model

The Iowa Model of Evidence-Based Practice to Promote Quality Care



(Melnik & Fineout-Overholt, 2015; Barger 2017)

Strengths

- Ease of use
- Adaptability
- Multidisciplinary team approach
 - *Team formation based on strengths/skills*
 - *Critical appraisal and hierarchy of evidence performed*
 - *Pilot project implemented, if applicable adapt change in practice*
- Quality assurance
 - *Evaluation of risk management*
- Inclusion of financial data
 - *Strengthen support of stakeholders and senior leadership*
- Combines research utilization and EBP
- Evaluates problem focused triggers vs knowledge focused triggers



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Synopsis of the Evidence

- Malnutrition contributes significantly to the problem of iron-deficiency anemia, with **one in four children exhibiting stunting of growth due to moderate or severe malnutrition** (USAID,2018).
- Over the past 10 years in Haiti, the prevalence of iron-deficiency anemia in the pediatric population has increased from 61% to 66% (USAID,2018).
- **The WHO recommends screening of all children, if available, and iron supplementation or multivitamin powder to be universally distributed in regions where iron-deficiency anemia is problematic (WHO, 2014).**
- Benefits of Hgb level screening for iron-deficiency anemia in developing countries and iron supplementation was proven in a recent meta-analysis to outweigh potential risks (Neuberger, et al., 2016).



Project Plan Process

I propose a primary and secondary screening plan that will be used in a primary school in Haiti with written parental consent and patient assent obtained.

- 1) All patients will be screened by using a WHO color scale Hgb paper test by using capillary blood obtained by a finger stick test and/or a Hemocue by a RN student. RN has been trained on devices and cost.
- 2) Pediatric patients will then be assessed by a provider and treated for iron-deficiency anemia using the WHO guidelines criteria.
- 3) The pediatric patient would receive liquid suspension or iron tablets, should they meet the criteria for having iron-deficiency anemia. Education would be completed with the pediatric patient and their parent. They have been educated that they have the right to refuse medication at any time.
- 4) All students will be treated empirically for helminths using broad-spectrum benzimidazoles per WHO guidelines, unless treated elsewhere in the last six months (WHO, 2017).



Timeline

- February 20th IRB approval submitted. February 24th IRB approval obtained
- March 31st DNP Presentation
- Late April, turn in final manuscript



Cost-Benefit Analysis

Cost

The cost to treat 80 pediatric patients for anemia for one month and 104 pediatric patients for intestinal parasites for three-six months equates to \$550.52. This equates to \$2.99 per condition/child/month. Medical supplies and interpretation cost was \$1,219.00. The total cost of this project is \$1,769.52 US. The above costs were covered by donations.

Benefit

The average cost for hospitalization in Haiti is \$25.06 US at a high-level facility not including tests or medications (McBain, 2018). The average length of stay for a pediatric severe anemia patient is four days and the average length of stay for a pediatric malnutrition patient is seven days. (Malek, et al., 2019). **This equates to \$100.24-175.42 per admission not including labs or medication.**



Results/ Conclusion

- Of the 129 pediatric patients screened, no children were at risk for acute malnutrition (middle upper arm circumference 13.5 or greater). All receive an extra meal, five days a week while in school for free through The Rosemilla Project Feeding Program
- 104 out of 129 pediatric patients (80%) received preventative chemotherapy for helminths. The remaining patients either did not return to clinic, already received treatment within the past six months, or refused.
- Of the 119 pediatric patients where Hgb levels were obtained, 58% (n=69) were diagnosed with iron deficiency anemia and subsequently treated with oral iron supplementation for a period of four weeks. 4% (n=5) of the pediatric patients in this pilot study were diagnosed with severe anemia. The average Hgb level was 10.23



Implications for Clinical Practice

- Lack of adherence to guidelines leads to increased rates of hospitalization for moderate and severe anemia and increased risk of cognitive effects, stunting, or death.
- Improved adherence the WHO guidelines for treatment of iron-deficiency anemia and preventative chemotherapy to control helminth infections in at risk population groups will lead to optimal patient outcomes.



Appendix H

DNP Program Outcomes Exemplars

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
<p>DNP Essential I: Scientific Underpinnings for Practice</p> <p>NONPF: Scientific Foundation Competencies</p> <p><i>The scientific foundation of nursing practice has expanded and includes a focus on both the natural and social sciences including human biology, genomics, science of therapeutics, psychosocial sciences, as well as the science of complex organizational structures. In addition, philosophical, ethical, and historical issues inherent in the development of science create a context for the application of the natural and social sciences.</i></p>	<p>2. Synthesize nursing and other scientific and ethical theories and concepts to create a foundation for advanced nursing practice.</p>	<p>Fall 2017</p> <ul style="list-style-type: none"> • DNPC 611: Created a PICOT question and utilized Nola Pender's Health Promotion Model for EBP. Created EBP project #1 for: Impact of Adverse Events on Insulin Dependent Diabetics with Dr. Kathy James. <p>Spring 2018</p> <ul style="list-style-type: none"> • DNPC 626: Utilized Iowa Model for EBP project on revised project #2: Reducing Hospital Readmission Rates for Insulin Dependent Diabetics with Dr. Kathy James. <p>Summer 2018</p> <ul style="list-style-type: none"> • DNPC 610: Developed Narrative Reflections using the Johns Model of Structured Reflection. Faculty advisor chosen- Dr. Lucia Gonzales. Created EBP project #3 Improved Screening at School Health Center for Victims of Domestic Violence and Sexual Assault. <p>Fall 2017-Summer 2018</p> <ul style="list-style-type: none"> • DNPC 630: Created a PICOT question for DNP Project <p>Fall 2018</p>

		<p>DNPC 630: Faculty advisor moved. New faculty advisor, Dr. Sharon Boothe-Kepple chosen. Began clinical at Sycuan Medical Dental Center. Created DNP project #4 Treatment of periodontal disease for glycemic control in people with diabetes mellitus. DNP project plan and implementation shaped by the Iowa model. Logic model, power point stakeholder presentation given, and 10-page paper written on project outline and timeline. After meeting with stakeholders, amended DNP project to EBP project #5 Dental Screening Program for Patients with T2DM. Began process of IRB submission.</p> <p>Spring 2019</p> <p>Attended American Indian Wellness Conference April 22-25, 2019 with faculty advisor to gain insight, connections, and ideas for our project.</p> <ul style="list-style-type: none"> • DNPC 630: Clinical site declined to accept project over concerns of access to patient information. • DNPC 686: Appraised literature for DNP project using the Johns Hopkins Model • Started Clinical at El Centro Regional Medical Center and Migrant Health Center with UCSD. Looked for potential EBP projects there. Also looked into San Diego Task Force for Homeless project. Our main goal was to work in an underserved community. • Met with Dr. Marsh, Dr. Macauley, Dr. Hoyt to see if USD Haiti trip would be possibility. United States level 4 travel status, unable to lead medical mission to collect post-data. <p>Summer 2019</p> <ul style="list-style-type: none"> • DNP 630: Began to plan EBP project #6 Educating Providers on Clinical Practice Guidelines (CPG) Established by the Infectious Disease Society of America (ISDA) for the Diagnosis and Management
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AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
		<p>of Skin and Soft Tissue Infections (SSTI) at El Centro Regional Medical Center.</p> <p>Fall 2019</p> <ul style="list-style-type: none"> • DNP 630: Created poster 10/2019. Created Powerpoint, presented to hospital stakeholders two times in board meetings. USD faculty even attended a third board meeting. Made many adjustments to project and created several versions for hospital administration. EBP project #7 addressed concerns of stakeholders by using a provider survey/checklist instead of accessing patient charts. Wrote paper and project plan. Review of literature. Began process of IRB. • Presented at AAENP in Las Vegas, NV. • Unable to get approval at clinical site. <p>Spring 2020</p> <p>DNP 630: January 2020, began to plan EBP project #8: Screening for Iron-Deficiency Anemia in the Pediatric Population (Ages 1-17) in Gonaïves, Haiti</p> <ul style="list-style-type: none"> • IRB approval: February 24th, 2020 • Performed all steps of DNP project • Presented DNP project during USD DNP Poster Presentation Day • Late April 2020- Completion and Submission of Final Manuscript
<p>DNP Essential II: Organizational & System Leadership for Quality improvement and Systems Thinking</p> <p>NONPF: Leadership Competencies/Health Delivery System Competencies</p> <p><i>Advanced nursing practice includes an</i></p>	<p>5. Design, implement, and evaluate ethical health care delivery systems and information systems that meet societal needs and ensure accountability for quality outcomes.</p>	<p>Spring 2018</p> <ul style="list-style-type: none"> • DNPC 626: Developed a strategic plan for T2DM treatment adherence EBP project; created and presented a case study on Iron Deficiency Anemia <p>Summer 2018</p> <ul style="list-style-type: none"> • DNPC 653: Evaluated and conducted a competitive analysis on CureMD, Epic, and Athenahealth.

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
<i>organizational and systems leadership component that emphasizes practice, ongoing improvement of health outcomes, and ensuring patient safety. Nurses should be prepared with sophisticated expertise in assessing organizations, identifying system's issues, and facilitating organization-wide changes in practice delivery. This also requires political skills, systems thinking, and the business and financial acumen needed for the analysis of the practice quality and costs.</i>		<p>Fall 2017-Summer 2018</p> <ul style="list-style-type: none"> • DNPC 630: See above. • DNPC 653: Developed EHR Business Proposal <p>Fall 2018</p> <ul style="list-style-type: none"> • DNPC 630: See above. <p>Spring 2019</p> <ul style="list-style-type: none"> • DNPC 630: See above. • DNPC 686: Created a SWOT analysis and outcome and process data monitoring, and identified EBP project facilitators, barriers and ways to overcome resistance <p>Summer 2019</p> <ul style="list-style-type: none"> • DNPC 630: See above. <p>Fall 2019</p> <ul style="list-style-type: none"> • DNP 630: See above. <p>Spring 2020</p> <ul style="list-style-type: none"> • DNP 630: See above.
<p>DNP Essential III: Clinical Scholarship & Analytical Methods for Evidence-Based Practice</p> <p>NONPF: Quality Competencies/Practice Inquiry Competencies</p> <p><i>Scholarship and research are the</i></p>	<p>4. Incorporate research into practice through critical appraisal of existing evidence, evaluating practice outcomes, and developing evidence-based practice guidelines.</p>	<p>Fall 2017</p> <ul style="list-style-type: none"> • DNPC 611: Synthesized and critiqued evidence in EBP manuscript/project. Participated and presented on meta-analysis and meta-synthesis. • DNPC 625: Incorporated best practice for Iron-Deficiency Anemia in Pediatric Patients in Haiti. • APNC 520: Class waived (MEPN).

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
<i>hallmarks of doctoral education. Although basic research is viewed as the first and most essential form of scholarly activity, an enlarged perspective of scholarship has emerged through alternative paradigms that involve more than discovery of new knowledge. These paradigms recognize: (2) the scholarship of discovery and integration “reflects the investigative and synthesizing traditions of academic life;” (2) scholars give meaning to isolated facts and making connections across disciplines through the scholarship of integration; and (3) the scholar applies knowledge to solve a problem via the scholarship of application that involves the translation of research into practice and dissemination and integration of new knowledge.</i>		<p>Spring 2018</p> <ul style="list-style-type: none"> • APNC 523: Gathered and evaluated existing evidence on CAM therapy Coenzyme Q10. • DNPC 648: Critical appraisal of health policies related to full practice authority and Nurse Licensure Compact • HCIN 540: Class Waived (MEPN). <p>Fall 2017-Fall 2018</p> <ul style="list-style-type: none"> • DNPC 630: See above. <p>Fall 2018</p> <ul style="list-style-type: none"> • DNPC 622: Created a presentation about Childhood Acute Lymphocytic Leukemia (cALL) and Pediatric Asthma Guidelines using EBP <p>Spring 2019</p> <ul style="list-style-type: none"> • DNPC 630: See above • DNPC 686: Appraised literature for DNP project using Johns Hopkins Model <p>Summer 2019</p> <ul style="list-style-type: none"> • DNPC 630: See above. • NPTC 605: Researched and applied evidence-based guidelines during clinical rotations at El Centro Regional Medical Center Emergency Department, Grace Family Health and Urgent Care, Migrant Health with UCSD, and UCSD Inpatient Trauma. <p>Fall 2019</p> <ul style="list-style-type: none"> • DNP 630: See above. • NPTC 608: Researched and applied evidence-based guidelines during clinical

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
		<p>rotations at El Centro Regional Medical Center Emergency Department, Metro Correctional Facility, Migrant Health with UCSD, and UCSD Inpatient Trauma.</p> <p>Spring 2020</p> <ul style="list-style-type: none"> • DNP 630/NPTC 609: Completed full DNP manuscript
<p>DNP Essential IV: Information Systems/Technology & Patient Care Technology for Improvement & Transformation of Health Care</p> <p>NONPF: Technology & Information Literacy Competencies</p> <p><i>DNP graduates are distinguished by their abilities to use information systems/technology to support and improve patient care and health care systems, and provide leadership within health care systems and/or academic settings. Knowledge and skills related to information systems/technology and patient care technology prepare the DNP graduates apply new</i></p>	<p>7. Incorporate ethical regulatory, and legal guidelines in the delivery of health care and the selection, use, and evaluation of information systems and patient care technology.</p>	<p>Fall 2017</p> <ul style="list-style-type: none"> • DNPC 625: Obtained Responsible Conduct of Research- Social and Behavior Responsible Conduct of Research Course & Conflicts of Interest Course through CITI <p>Spring 2018</p> <ul style="list-style-type: none"> • HCIN 540: Class waived (MEPN). <p>Summer 2018</p> <ul style="list-style-type: none"> • DNPC 610 • DNPC 653: Evaluated and conducted a competitive analysis on Kareo Clinical, AdvancedMD, and drchronos electronic health record systems; Developing a business proposal for utilization of an electronic health record system for a small medical practice ;Developed EHR Business Proposal <p>Fall 2018</p> <ul style="list-style-type: none"> • DNPC 630: Received faculty advisor letter of support, DNP site letter of support, and USD IRB approval for DNP Project • Obtained Human Subjects Research- Biomedical Research Basic/Refresher

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
<i>knowledge, manage individual and aggregate level information, and assess the efficacy of patient care technology appropriate to a specialized area of practice along with the design, selection, and use of information systems/technology to evaluate programs of care, outcomes of care, and care systems. Information systems/technology provide a mechanism to apply budget and productivity tools, practice information systems and decision supports, and web-based learning or intervention tools to support and improve patient care.</i>		<p>Course through CITI</p> <p>Spring 2019</p> <ul style="list-style-type: none"> • DNPC 630: See above. <p>Summer 2019</p> <ul style="list-style-type: none"> • DNPC 630: See above. • NPTC 605: Completed HIPAA learning module for clinical rotation. <p>Fall 2019</p> <ul style="list-style-type: none"> • DNP 630: See above. • NPTC 608: Utilized EHR at clinical site <p>Spring 2020</p> <ul style="list-style-type: none"> • DNP 630: Created graphs on official DNP project data for manuscript and poster presentation. Added DNP results on Excel to DNP manuscript • NPTC 609: Utilized Navy's EHR, EPIC, paper based charting at clinical sites <p>Extra-curricular:</p> <ul style="list-style-type: none"> • The Rosemila Project- Co-Founder and President of Organization • Philanthropy Committee Representative • Peer-Elected Graduate Student Counsel Representative • California Association of Nurse Practitioners Conference • Advanced Emergency Nursing Journal Publication-Atypical Variant of Cutaneous Tuberculosis Presentation in an Adult HIV-

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
		<p>Infected Patient in an Emergency Department in Haiti</p> <ul style="list-style-type: none"> • Medical Mission at Holy Innocent's Children's Hospital- Uganda
<p>DNP Essential V: Health Care Policy for Advocacy in Health Care</p> <p>NONPF: Policy Competencies</p> <p><i>Health care policy, whether created through governmental actions, institutional decision-making, or organizational standards, creates a framework that can facilitate or impede the delivery of health care services or the ability of the provider to engage in practice to address health care needs. Engagement in the process of policy development is central to creating a health care system that meets the needs of its constituents. Political activism and the commitment to policy development are central elements of DNP practice.</i></p>	<p>3. Demonstrate leadership in collaborative efforts to develop and implement policies to improve health care delivery and outcomes at all levels of professional practice (institutional, local, state, regional, national, and/or international).</p>	<p>Spring 2018</p> <ul style="list-style-type: none"> • DNPC 648: Class Waived (MEPN) <p>Fall 2018</p> <ul style="list-style-type: none"> • Appointed student representative for Graduate Student Counsel. <p>Spring 2019</p> <ul style="list-style-type: none"> • Awarded Alumni Fund Scholarship <p>Summer 2019</p> <ul style="list-style-type: none"> • DNPC 630: Continued role as principal investigator for DNP project <p>Fall 2019:</p> <ul style="list-style-type: none"> • DNPC 630: Continued role as principal investigator for DNP project <p>Spring 2020</p> <ul style="list-style-type: none"> • DNP 630: Continued role as principal investigator for DNP project • NPTC 609: Continued role as NP student and patient advocate at clinical sites • Awarded Alumni Fund Scholarship
<p>DNP Essential VI: Interprofessional Collaboration for Improving Patient &</p>	<p>1. Demonstrate advanced levels of clinical practice within defined</p>	<p>Fall 2017</p> <ul style="list-style-type: none"> • DNPC 611: Participated in journal clubs and group presentations

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
<p>Population Health Outcomes</p> <p>NONPF: Leadership Competencies</p> <p><i>Today's complex, multi-tiered health care environment depends on the contributions of highly skilled and knowledgeable individuals from multiple professions. In order to accomplish the IOM mandate for safe, timely, effective, efficient, equitable, and patient-centered care in this environment, health care professionals must function as highly collaborative teams. DNP graduates have advanced preparation in the interprofessional dimension of health care that enable them to facilitate collaborative team functioning and overcome impediments to interprofessional practice. DNP graduates have preparation in methods of effective team leadership and are prepared to play a central role in establishing interprofessional teams, participating in the work of the team, and assuming leadership of</i></p>	<p>ethical, legal, and regulatory parameters in designing, implementing, and evaluating evidenced-based, culturally competent therapeutic interventions for individuals or aggregates.</p> <p>3. Demonstrate leadership in collaborative efforts to develop and implement policies to improve health care delivery and outcomes at all levels of professional practice (institutional, local, state, regional, national, and/or international).</p>	<p>Spring 2018</p> <ul style="list-style-type: none"> • DNPC 648: Class waived (MEPN) • DNPC 626: Participated in group presentations on strategic planning case studies <p>Fall 2017-Fall 2018</p> <ul style="list-style-type: none"> • DNPC 630: Conducted and participated in meetings with clinical mentor, faculty advisor regarding DNP Project <p>Fall 2018</p> <ul style="list-style-type: none"> • NPTC 602: Demonstrated leadership and provided and participated in holistic care. <p>Spring 2019</p> <ul style="list-style-type: none"> • NPTC 604: Researched and applied evidence-based guidelines during clinical rotations at Migrant Health with UCSD and Sycuan Medical Dental Center. <p>Summer 2019</p> <ul style="list-style-type: none"> • NPTC 605: Demonstrated leadership and provided holistic advanced clinical care using up to date evidence-based guidelines in a primary care setting across the lifespan • Researched and applied evidence-based guidelines during clinical rotations at El Centro Regional Medical Center Emergency Department, Grace Family Health and Urgent Care, Migrant Health with UCSD, and UCSD Inpatient Trauma. <p>Fall 2019</p> <ul style="list-style-type: none"> • DNP 630: Conducted and participated in meetings with clinical mentor, faculty advisor regarding DNP Project

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
<i>the team when appropriate.</i>		<ul style="list-style-type: none"> • NPTC 608: Demonstrated leadership and provided holistic advanced clinical care using up to date evidence-based guidelines in a primary care setting across the lifespan <p>Spring 2020</p> <ul style="list-style-type: none"> • DNP 630: Conducted and participated in meetings with clinical mentor, faculty advisor regarding DNP Project • NPTC 609: Demonstrated leadership and provided holistic advanced clinical care using up to date evidence-based guidelines in a primary care setting across the lifespan
<p>DNP Essential VII: Clinical Prevention & Population Health for Improving Nation's Health</p> <p>NONPF: Leadership Competencies</p> <p><i>Consistent with national calls for action and with the longstanding focus on health promotion and disease prevention in nursing, the DNP graduate has a foundation in clinical prevention and population health. This foundation enables DNP graduates to analyze epidemiological, biostatistical, occupational, and environmental data in the development,</i></p>	<p>6. Employ a population health focus in the design, implementation, and evaluation of health care delivery systems that address primary secondary, and tertiary levels of prevention.</p>	<p>Fall 2017</p> <ul style="list-style-type: none"> • DNPC 611: See above • DNPC 625: See above <p>Spring 2018</p> <ul style="list-style-type: none"> • DNPC 626: See above • HCIN 540: Class waived. (MEPN). <p>Fall 2017-Summer 2018</p> <ul style="list-style-type: none"> • DNPC 630: Planning to implement tertiary level of prevention health promotion (screening and treatment for IDA). <p>Fall 2018</p> <ul style="list-style-type: none"> • NPTC 602: Create preventative plan of care for CCE and CSE patients; created health promotion plan of care for adult patients <p>Spring 2019:</p>

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
<i>implementation, and evaluation of clinical prevention and population.</i>		<ul style="list-style-type: none"> • NPTC 604: Create woman's health care plan for OSCE patients regarding contraception through primary and secondary screenings • Provided primary, secondary, and tertiary at Sycuan Medical Dental Center. <p>Summer 2019</p> <ul style="list-style-type: none"> • NPTC 605: Provided primary, secondary and tertiary levels of prevention to clinical sites as listed above. Developed plan of care. • DNP 630: As above. <p>Fall 2019</p> <ul style="list-style-type: none"> • NPTC 608: As above. • <p>: Created plan of care for patients with acute MSK injuries, COPD exacerbations, and abdominal pain</p> <p>Spring 2020</p> <ul style="list-style-type: none"> • NPTC 609: Provided primary, secondary and tertiary levels of prevention to patients across the lifespan at clinical sites. <p>Case Studies: Created plan of care for patients with syncope</p>
<p>DNP Essential VIII: Advanced Nursing Practice</p> <p>NONPF: Independent Practice/Ethics Competencies</p> <p><i>The increased knowledge and sophistication of health care has resulted in the growth of specialization</i></p>	<p>1. Demonstrate advanced levels of clinical practice within defined ethical, legal, and regulatory parameters in designing, implementing, and evaluating evidence-based, culturally competent</p>	<p>Spring 2018-Fall 2018</p> <ul style="list-style-type: none"> • Implement use of evidence-based literature to guide best practice for Health Promotion DNP Project <p>Fall 2018</p> <ul style="list-style-type: none"> • NPTC 602: Demonstrated evidence-based practices to T2DM patients at Sycuan Medical Dental Center.

AACN DNP Essentials & NONPF Competencies	USD DNP Program Objectives	Exemplars Provide bulleted exemplars that demonstrates achievement of each objective
<p><i>in nursing in order to ensure competence in these highly complex areas of practice. The reality of the growth of specialization in nursing practice is that no individual can master all advanced roles and the requisite knowledge for enacting these roles. DNP programs provide preparation within distinct specialties that require expertise, advanced knowledge, and mastery in one area of nursing practice. A DNP graduate is prepared to practice in an area of specialization within the larger domain of nursing.</i></p>	<p>therapeutic interventions for individuals or aggregates.</p>	<p>Spring 2019</p> <ul style="list-style-type: none"> • NPTC 604: Demonstrated evidence-based practices to T2DM patients at Sycuan Medical Dental Center using UpToDate. <p>Summer 2019</p> <ul style="list-style-type: none"> • NPTC 605: Conducted health preventative health examinations, ordered health age and risk related screenings; provided secondary and tertiary level of care such as proper referrals to chronic related diseases at primary care clinic and urgent care. <p>Fall 2019</p> <ul style="list-style-type: none"> • NPTC 608: Conducted health preventative health examinations, ordered health age and risk related screenings; provided secondary and tertiary level of care such as proper referrals to chronic related diseases at primary care clinic, urgent care, and ED. <p>Spring 2020</p> <ul style="list-style-type: none"> • NPTC 609: Conducted health preventative health examinations, ordered health age and risk related screenings; provided secondary and tertiary level of care such as proper referrals to chronic related diseases at primary care clinics: family practice and internal medicine

Appendix I

CITI Human Subjects Training



Completion Date 08-Jun-2019
Expiration Date 07-Jun-2022
Record ID 31941830

This is to certify that:

Cara Fratianni

Has completed the following CITI Program course:

Human Subjects Research - Biomed (Curriculum Group)
Biomedical Research - Basic/Refresher (Course Learner Group)
1 - Basic Course (Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

University of San Diego

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?w82349cc7-b036-4df9-8f48-7cd5c4478d07-31941830



Completion Date 28-May-2019
Expiration Date 27-May-2022
Record ID 25309692

This is to certify that:

Cara Fratianni

Has completed the following CITI Program course:

Human Subjects Research - SBR (Curriculum Group)
Social & Behavioral Research - Basic/Refresher (Course Learner Group)
1 - Basic Course (Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

University of San Diego

CITI
Collaborative Institutional Training Initiative

Verify at www.citiprogram.org/verify/?wdbc2a651-b578-4f59-ac64-0596cdd3785a-25309692



Completion Date 28-May-2019
Expiration Date 27-May-2022
Record ID 25309692

This is to certify that:

Cara Fratianni

Has completed the following CITI Program course:

Human Subjects Research - SBR (Curriculum Group)
Social & Behavioral Research - Basic/Refresher (Course Learner Group)
1 - Basic Course (Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

University of San Diego



Verify at www.citiprogram.org/verify/?wdbc2a651-b578-4f59-ac64-0596cdd3785a-25309692



Completion Date 16-Nov-2017
Expiration Date 15-Nov-2021
Record ID 25309695

This is to certify that:

Cara Fratianni

Has completed the following CITI Program course:

CITI Conflicts of Interest (Curriculum Group)
Conflicts of Interest (Course Learner Group)
1 - Stage 1 (Stage)

Not valid for renewal of certification through CME. Do not use for TransCelerate mutual recognition (see Completion Report).

Under requirements set by:

University of San Diego



Verify at www.citiprogram.org/verify/?w4c855713-5bf6-4750-b499-95604606998a-25309695